

AMENDMENT UNDER 37 C.F.R. § 1.111  
U.S. Appln. 09/634,461

that are assembled to constitute a single container. Applicants submit that one of ordinary skill in the art would understand the meaning of claim 3.

In view of the above, applicants submit that claim 3 complies with the requirements of the second paragraph of 35 U.S.C. § 112 and, accordingly, requests withdrawal of this rejection.

Claims 1, 9, 10, 12 and 13 have been rejected under 35 U.S.C. § 102(e) as anticipated by Ota et al.

Applicants submit that Ota et al do not disclose or render obvious the presently claimed invention.

The present invention, as set forth in claim 1 as amended above, is directed to a method for producing graphite carbon powder, comprising filling a carbon-made container having electrical resistively and electrical conductivity with carbon powder which has been prepared from carbon material through crushing in advance, and heating the carbon powder for graphitization by means of ohmic-resistance heat generated from the container through a direct supply of electricity to the container.

Thus, applicants have amended claim 1 to make it clear that the container has electrical resistance and conductivity, and that it is the resistance heating of the container by a direct supply of electricity to the container that generates the heat for the graphitization.

Support for these amendments to claim 1 can be found in the specification as follows:

Page 10, line 23 to page 11, line 1 of the specification: “having electrical resistance and electrical conductivity”

Page 21, line 5 of the specification: “direct”

AMENDMENT UNDER 37 C.F.R. § 1.111  
U.S. Appln. 09/634,461

The Examiner states that Ota et al teach, in column 1 and Figure 6, an Acheson furnace method for making graphite from carbon powder in a carbon casing by resistance heating. The Examiner states that the graphite made in Ota et al is considered to have the claimed characteristics since it was made in the claimed manner.

Applicants submit that the description of the Acheson furnace and the description of how to graphitize powdered carbon in such a furnace, at column 1, lines 16-30 and Figure 6, do not anticipate claim 1 of the present application.

An Acheson furnace and its use are well-known in the prior art. The present specification at page 4 describes an Acheson furnace.

The patent to Ota et al discloses, as prior art, an Acheson furnace. As described in column 1 and shown in Fig. 6 of Ota et al ('918), the conventional Acheson furnace is constructed such that packing coke 22 is filled to completely cover containers 21, and the outer wall of the apparatus as a whole is made of fire bricks 24. In this apparatus, an electric current is passed through the graphite terminal electrodes 25 and busbars 26, and the containers 21 are indirectly heated utilizing the resistance heating of packing coke. Applicants enclose herewith a paper explaining the term "busbars" in Fig. 6 of Ota et al '918.

On the other hand, in the present invention, packing coke is not necessary, but electricity is supplied directly to the carbon-made container, and the carbon powder within the container is heated utilizing the resistance heating of the container.

Applicants have amended claim 1 as set forth above in order to make clear the difference between the presently claimed invention and the use of the Acheson furnace in conventional techniques.

AMENDMENT UNDER 37 C.F.R. § 1.111  
U.S. Appln. 09/634,461

Applicants submit that the Acheson furnace described in Ota et al and its use in conventional techniques does not anticipate claim 1.

Claims 9, 10, 12 and 13 are dependent claims and are directed to a graphite powder having a specified interlayer distance. Claims 9 and 10 include the method of preparation and claims 12 and 13 include the apparatus for preparation. Applicants have amended claims 12 and 13 to refer to the apparatus, since these claims depend from claim 11 which is directed to the apparatus. Ota et al do not disclose the interlayer distance of graphite powder, or the method of the present invention. Since Ota et al do not disclose the method of the present claims and do not disclose an interlayer distance, Ota et al do not anticipate these claims.

In view of the above, applicants submit that Ota et al do not disclose the presently claimed invention and, accordingly, request withdrawal of this rejection.

Claims 2-8 and 14 have been rejected under 35 U.S.C. § 103(a) as obvious over Ota et al taken with Antoni et al.

Applicants submit that these documents do not disclose or render obvious the presently claimed invention and, accordingly, request withdrawal of this rejection.

Claims 2 to 8 depend from claim 1, and, accordingly, are patentable for the same reasons as discussed above in connection with the rejection of claim 1 over Ota et al.

Further, the Examiner states that Ota et al do not teach the details of the apparatus, but the Examiner takes "Official Notice" that these are standard features of an Acheson furnace, which are furthermore discussed by Antoni et al in columns 3 and 6.

Applicants disagree with the Examiner's assertion that the recitations of claims 2-8 and 14 are standard features. Applicants challenge the Examiner to establish that these recitations are standard features, as employed in the present invention.

With respect to the Examiner's reliance on Antoni et al at columns 3 and 6, the Examiner does not identify what portions of columns 3 and 6 he is relying on, and he does not identify which features of the present claims he believes columns 3 and 6 disclose.

The Examiner acknowledges that Ota et al teach that the cells are placed next to each other and are not stacked, but he asserts that stacking is an obvious expedient to make graphite. The stacking of the containers is recited in claim 2. Applicants point out that the Examiner has not provided any evidence or reason as to why stacking is an obvious expedient to make graphite. Applicants submit there is no description in Ota et al or Antoni et al that discloses or suggests the stacking of the container with ohmic resistance at the contact faces of the stacked container, as recited in claim 2.

The effect of the stacking of containers recited in claim 2 is described at page 10, lines 10 to 22 of the present specification. The contact resistance between containers serves as a main resistance heating part and, therefore, rapid heating and rapid cooling can be performed. For example, in the stacked containers shown in Fig. 5, the resistance heat is mainly generated by the resistance at the contact face of the stacked containers.

Turning now to Antoni et al, this patent discloses a graphitizing furnace, and employs a packing coke. Thus, Figure 3 of Antoni et al shows the presence of "IMK". The IMK shown in Fig. 3 of Antoni et al is described in column 6, line 50, and is "a stuffing mass of coke", which is

AMENDMENT UNDER 37 C.F.R. § 1.111  
U.S. Appln. 09/634,461

the same as the packing coke of Ota et al. Such a stuffing coke is not a constituent factor of the present invention.

Further, the container of Antoni et al is, as described in column 3, lines 39 to 41, a metallic cage. The container of the present invention is made of carbon and must have electrical resistance and electric conductivity, whereas the metallic cage of Antoni et al has no electrical resistance.

With respect to claim 5, applicants have amended this claim to replace the word "that", in line 2, with the word "thin". Support for this amendment can be found at page 12, lines 17 to 21 of the specification. Applicants submit that Antoni et al and Ota et al do not disclose the features of claim 5.

Further, claim 14 requires a graphite powder having a specified interlayer distance. Ota et al and Antoni et al do not disclose or suggest such a distance.

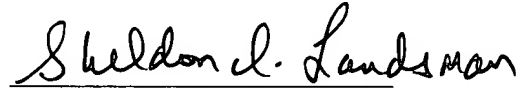
In view of the above, applicants submit that Ota et al and Antoni et al do not defeat the patentability of claims 2 to 8 and 14 and, accordingly, request withdrawal of this rejection.

In view of the above, reconsideration and allowance of this application are now believed to be in order, and such actions are hereby solicited. If any points remain in issue which the Examiner feels may be best resolved through a personal or telephone interview, the Examiner is kindly requested to contact the undersigned at the telephone number listed below.

The USPTO is directed and authorized to charge all required fees, except for the Issue Fee and the Publication Fee, to Deposit Account No. 19-4880. Please also credit any overpayments to said Deposit Account.

AMENDMENT UNDER 37 C.F.R. § 1.111  
U.S. Appln. 09/634,461

Respectfully submitted,



Sheldon I. Landsman  
Registration No. 25,430

SUGHRUE MION, PLLC  
2100 Pennsylvania Avenue, N.W.  
Washington, D.C. 20037-3213  
Telephone: (202) 293-7060  
Facsimile: (202) 293-7860

Date: August 26, 2002

APPENDIX

VERSION WITH MARKINGS TO SHOW CHANGES MADE

IN THE CLAIMS:

**The claims are amended as follows:**

1. (Amended) A method for producing graphite carbon powder, comprising filling a carbon-made container [made of carbon] having electrical resistance and electrical conductivity with carbon powder which has been prepared from carbon material through crushing in advance, and heating the carbon powder for graphitization by means of ohmic-resistance [heating of] heat generated from the container through a direct supply of electricity to the container.

5. (Amended) A method for producing graphite carbon powder according to claim 4, wherein [that] then graphite material which is inserted between the end of the container and the guide electrode prevents heat loss at the end of the graphite container.

12. (Amended) A graphite powder which is prepared with the apparatus [according to the method] as described in claim 11, wherein an interlayer distance ( $C_0$ ) in a C-axis direction in crystal is 6.730 Å or less.

13. (Amended) A graphite powder which is prepared with the apparatus [according to the method] as described in claim 11, wherein an interlayer distance ( $C_0$ ) in a C-axis direction in crystal is 6.725 Å or less.